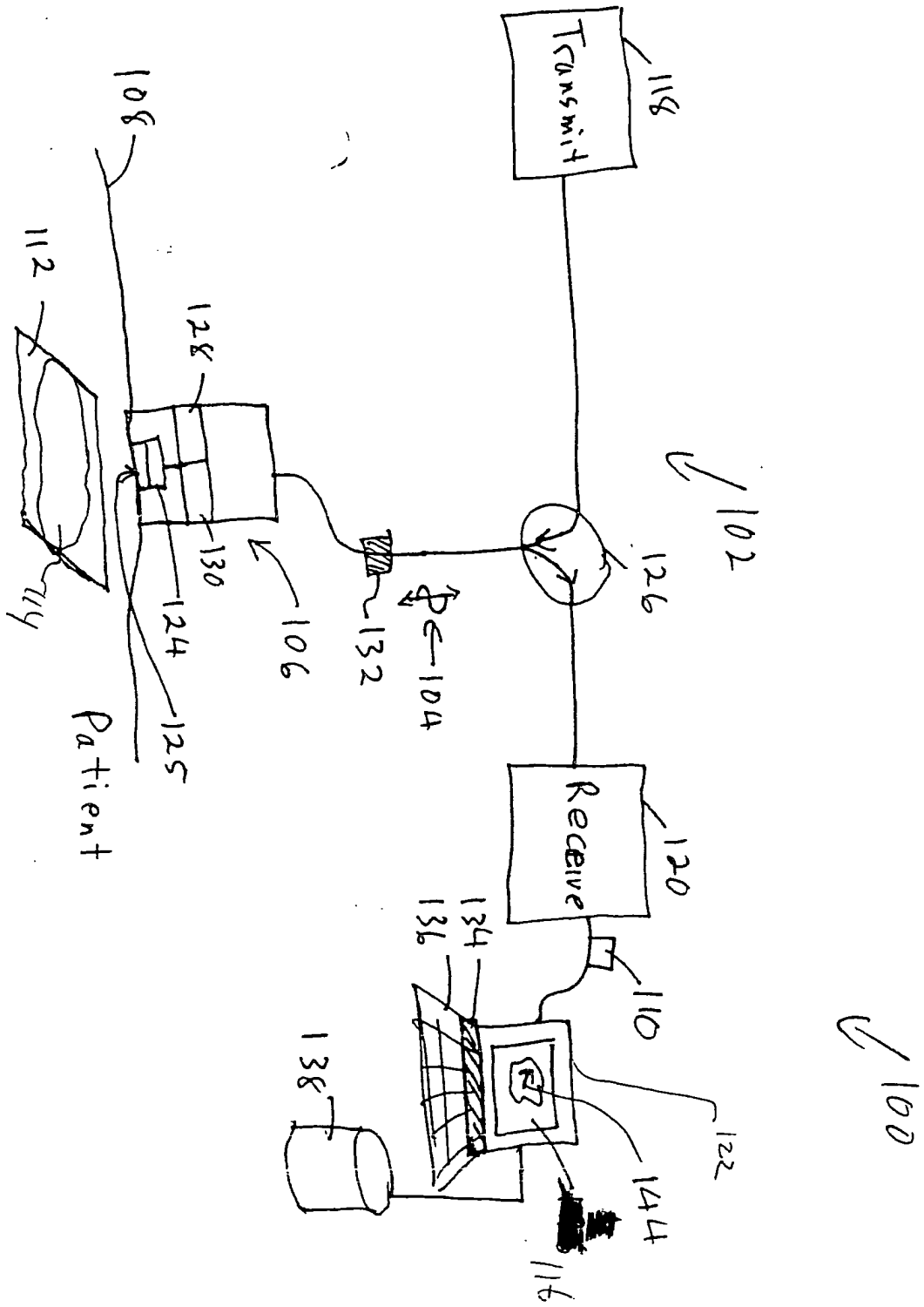

Transmit
118
108
112
128
130
106
132
104
126
102
124
125
Patient
Receive
120
134
136
110
138
122
144
116
100

Fig. 1A

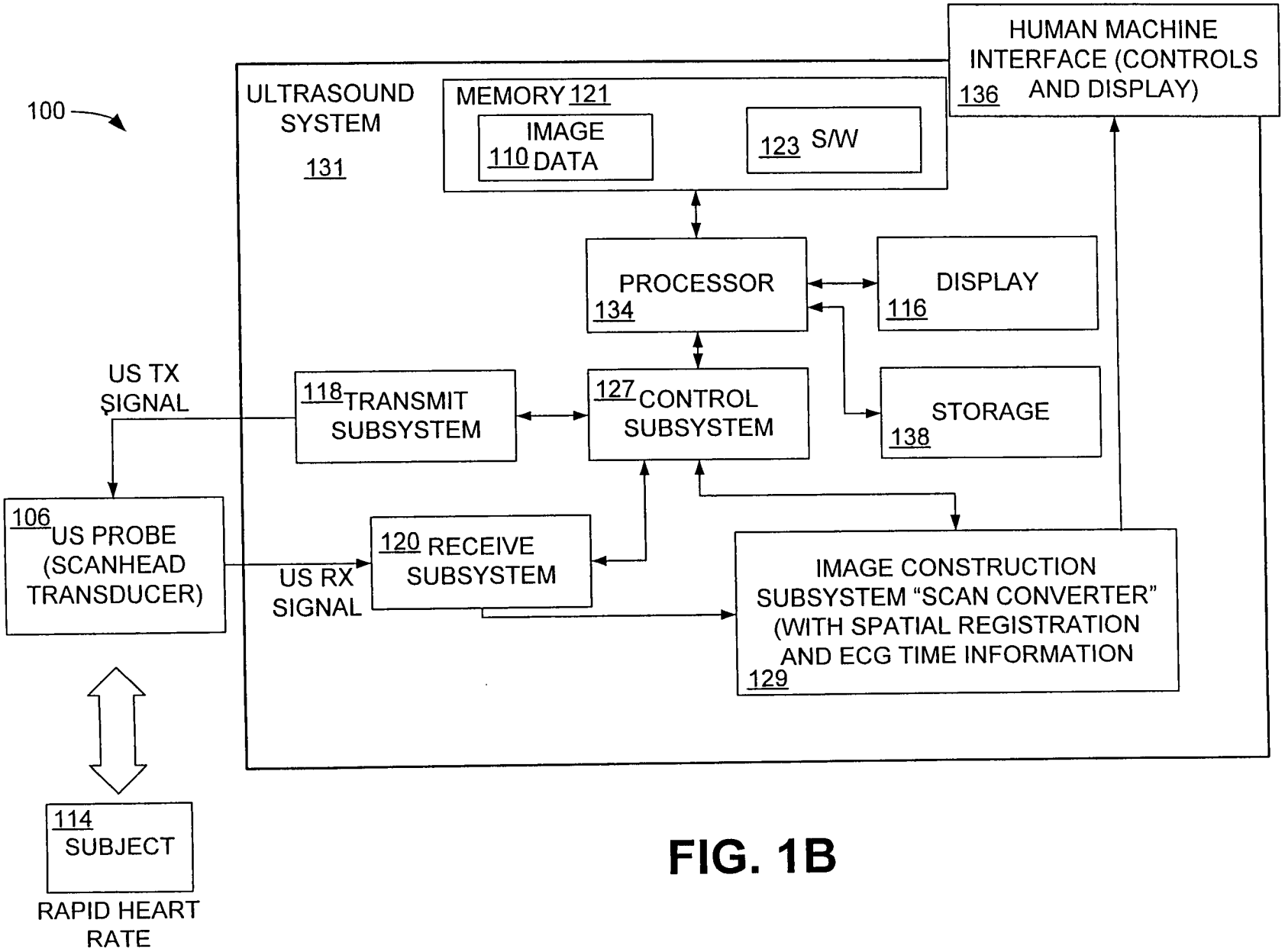

100
ULTRASOUND SYSTEM
131
MEMORY 121
IMAGE 110 DATA
123 S/W
HUMAN MACHINE INTERFACE (CONTROLS AND DISPLAY)
136
PROCESSOR 134
DISPLAY 116
US TX SIGNAL
118 TRANSMIT SUBSYSTEM
127 CONTROL SUBSYSTEM
STORAGE 138
106 US PROBE (SCANHEAD TRANSDUCER)
US RX SIGNAL
120 RECEIVE SUBSYSTEM
IMAGE CONSTRUCTION SUBSYSTEM "SCAN CONVERTER" (WITH SPATIAL REGISTRATION AND ECG TIME INFORMATION
129
114 SUBJECT
RAPID HEART RATE

FIG. 1B

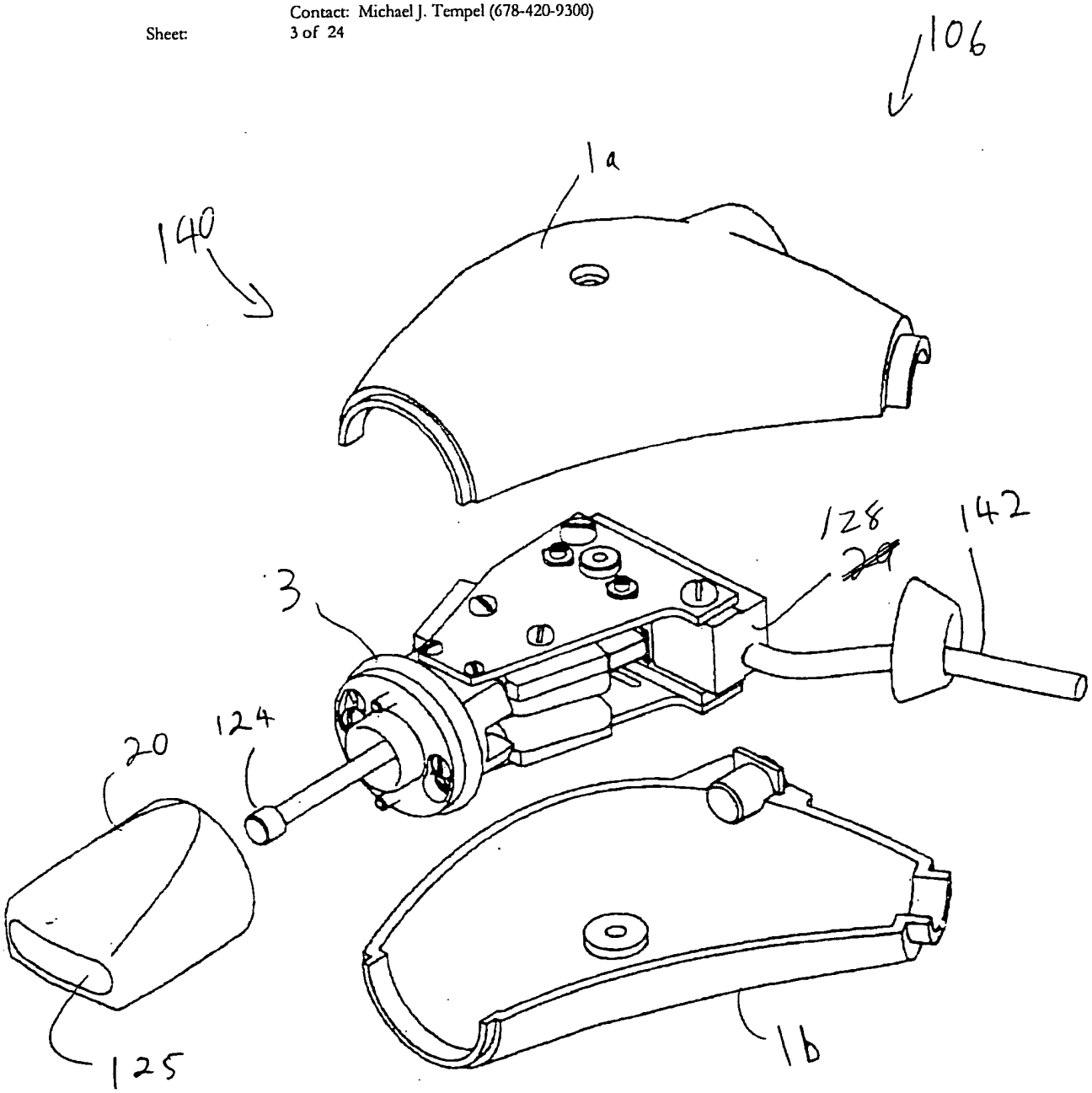


Fig. 2

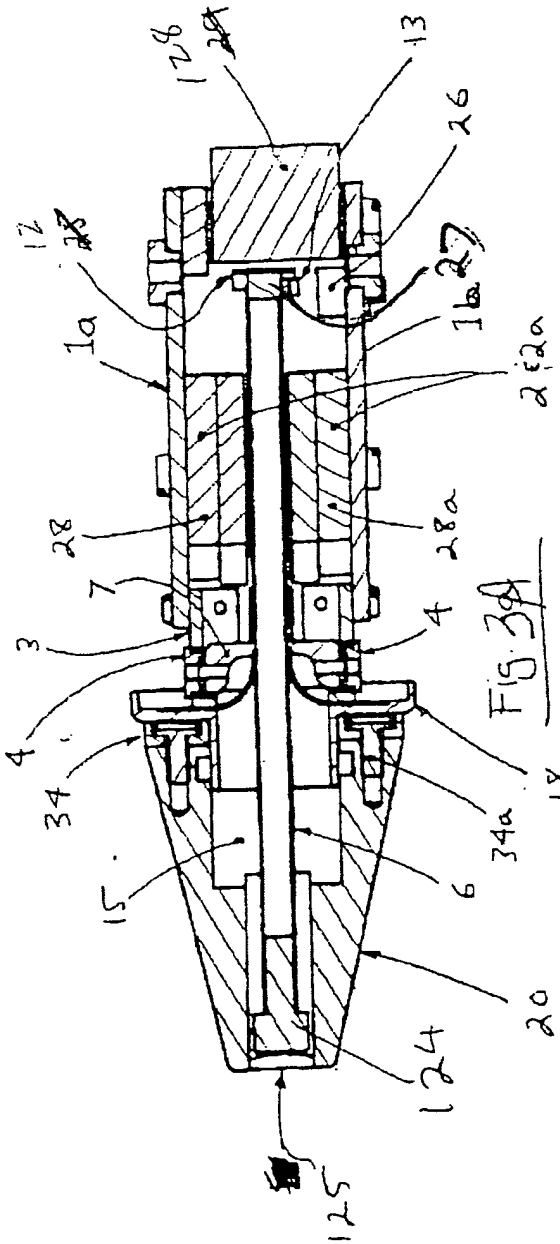

12a
13
26
12
1a
27
1b
2 & 2a
28
28a
7
4
3
4
34
34a
15
6
20
124
125

FIG 3A

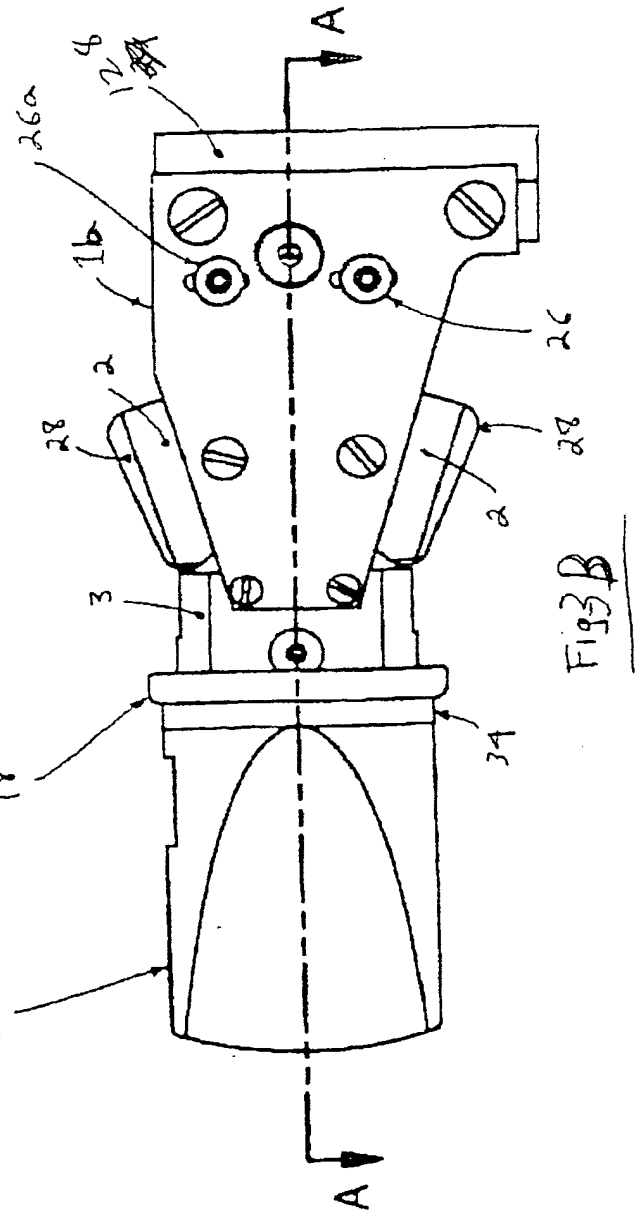

A
12a
26a
1b
26
2
28
28
2
3
18
34
20
A

FIG 3B

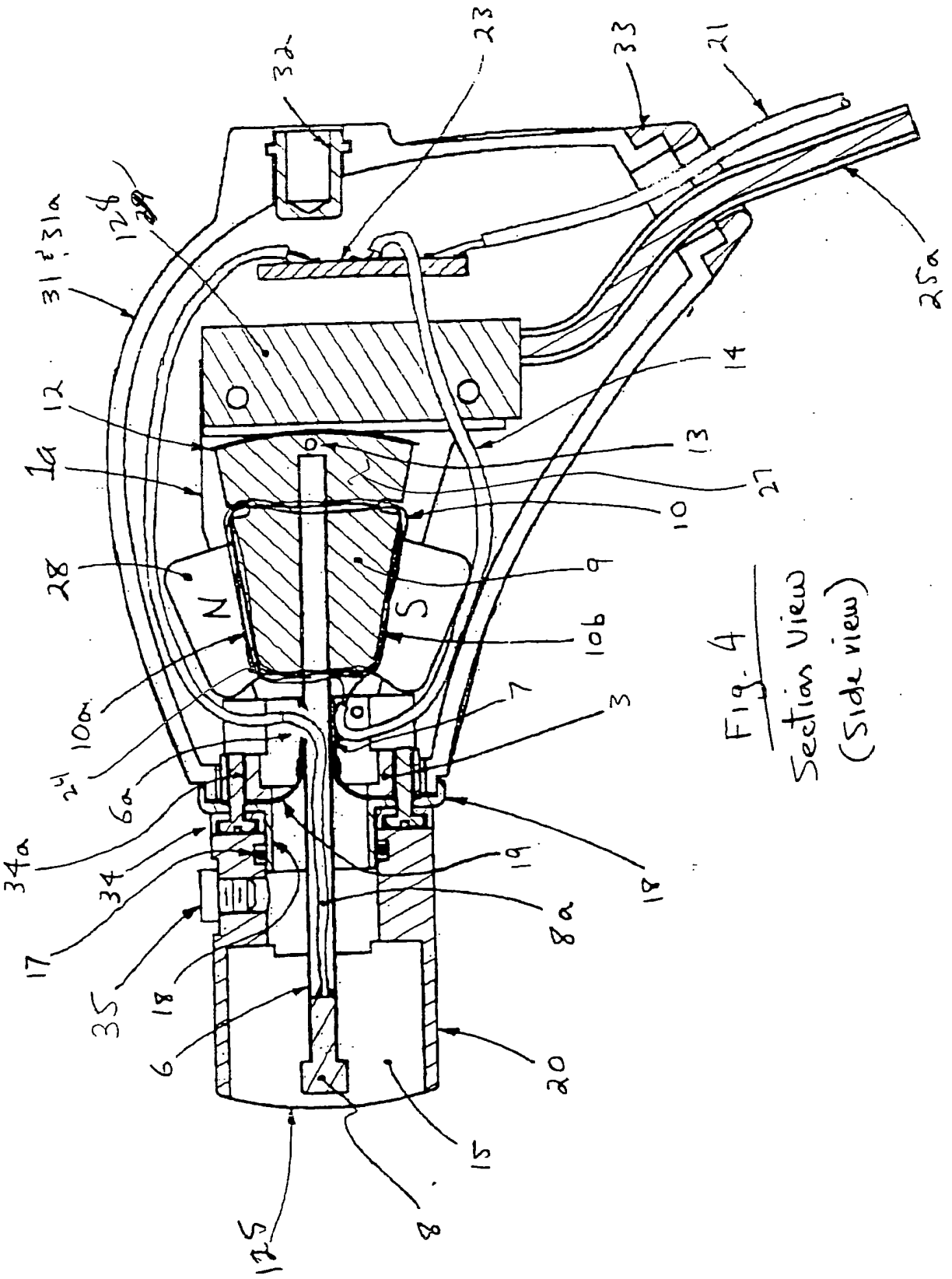


Fig. 4
Section View
(Side view)

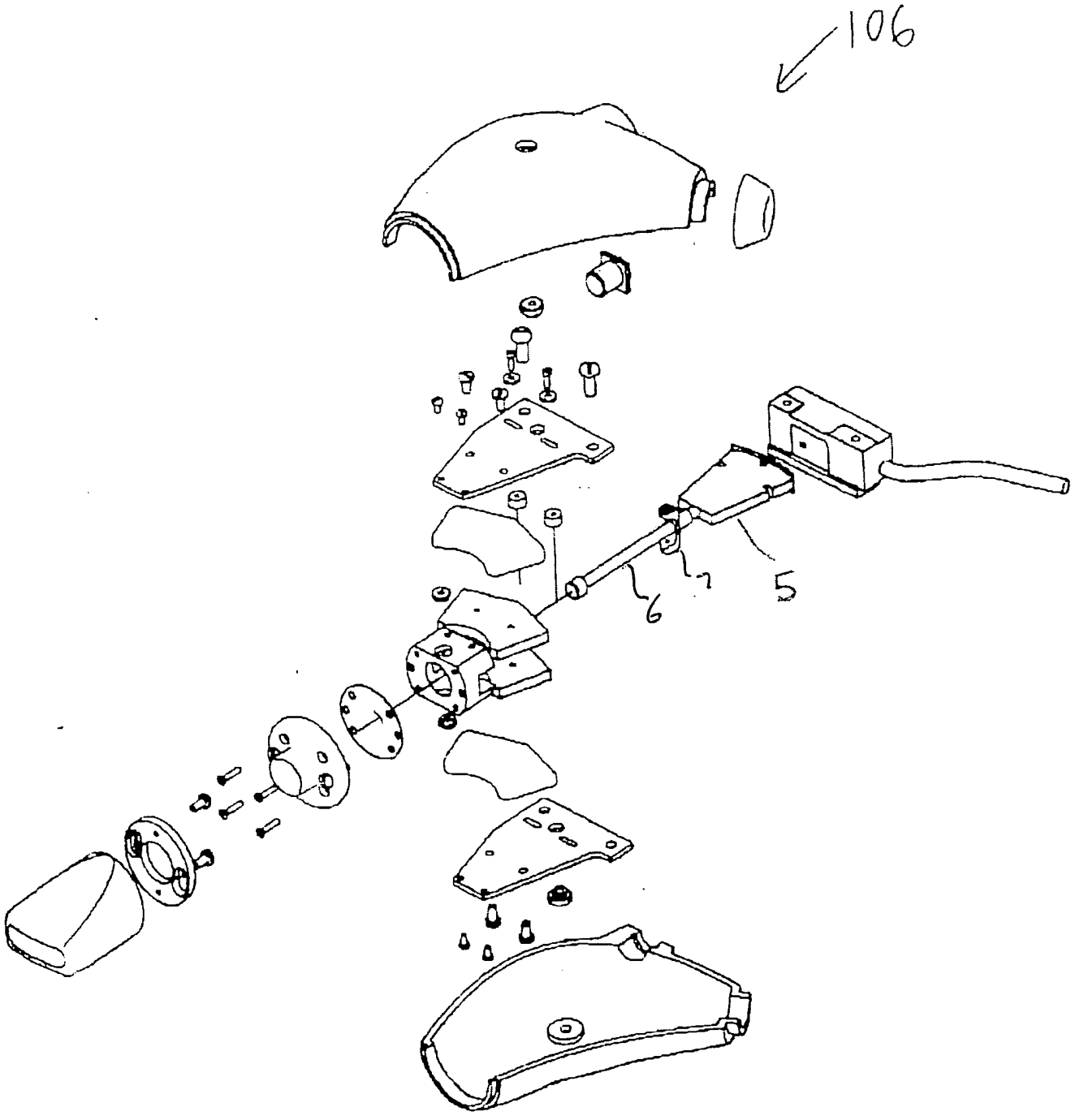


Fig. 5

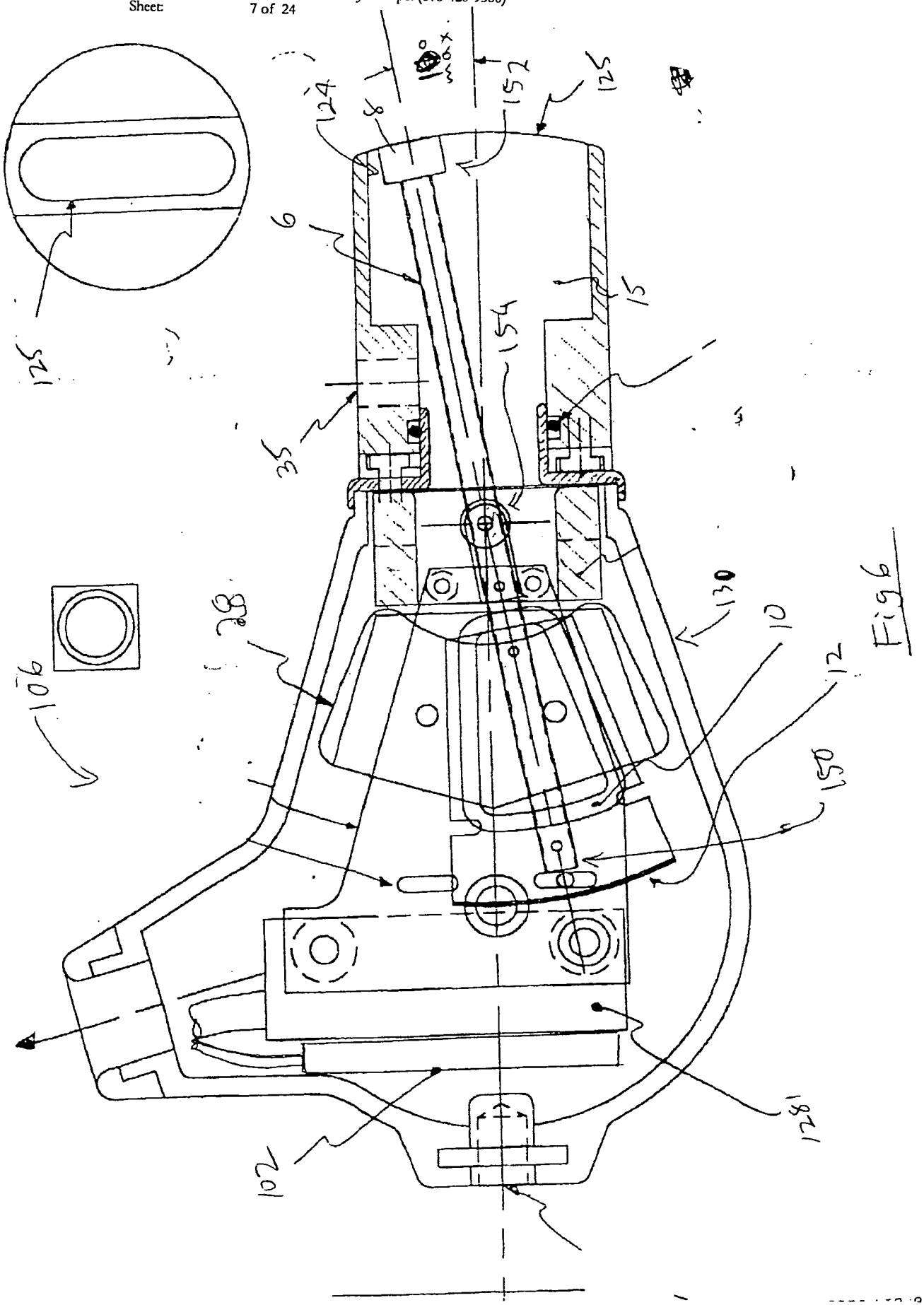


Fig 6

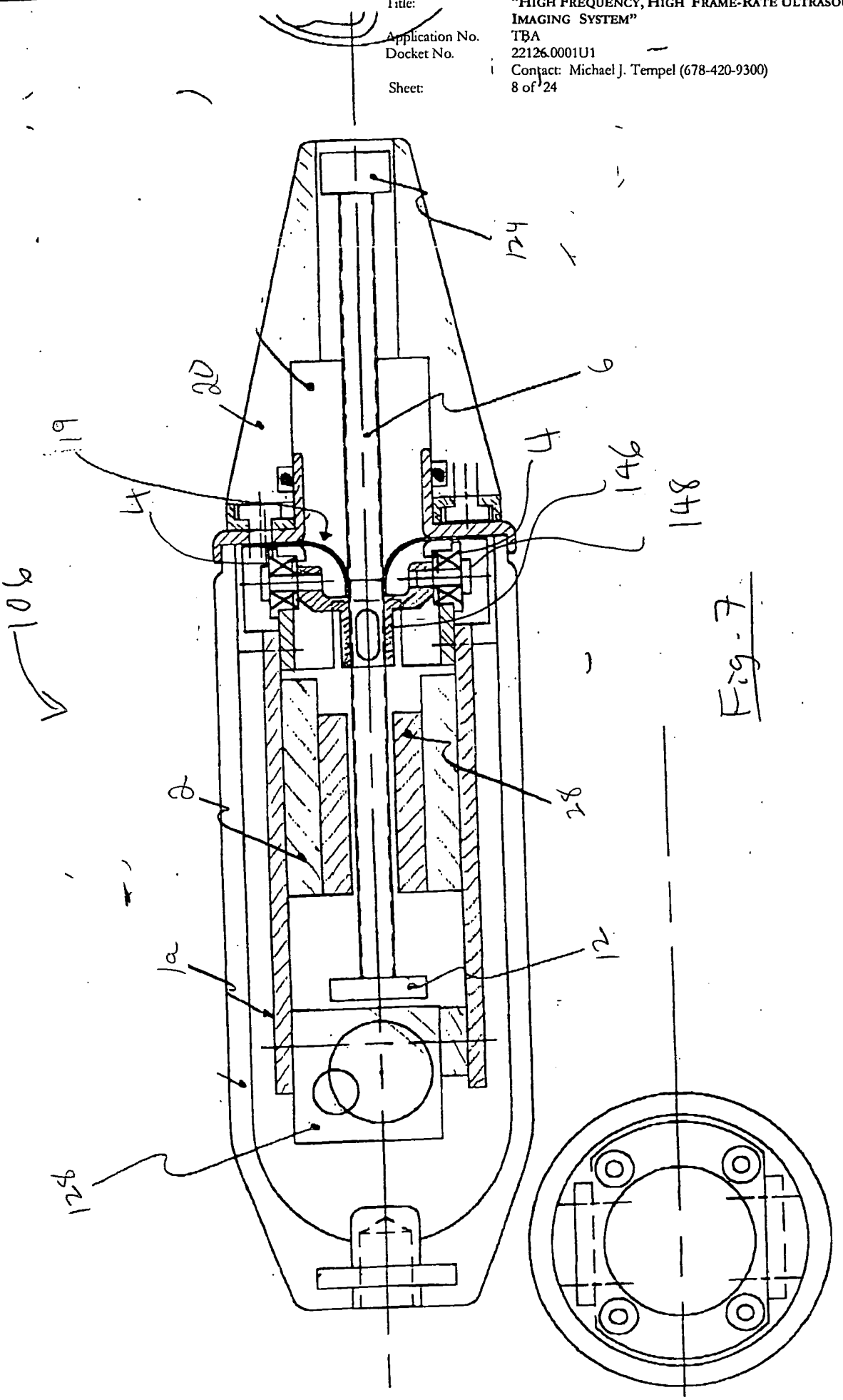


Fig. 7

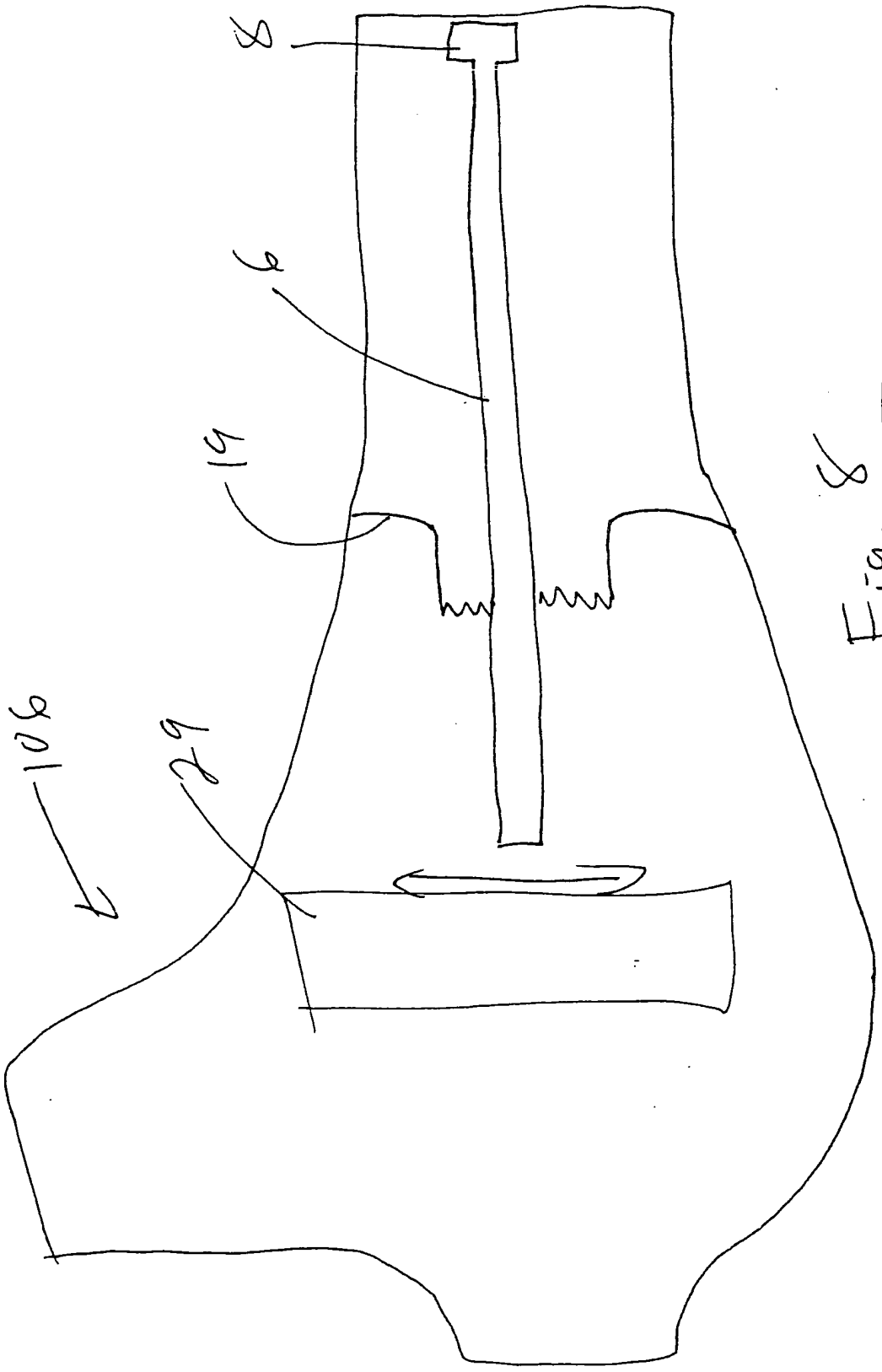


Fig. 8

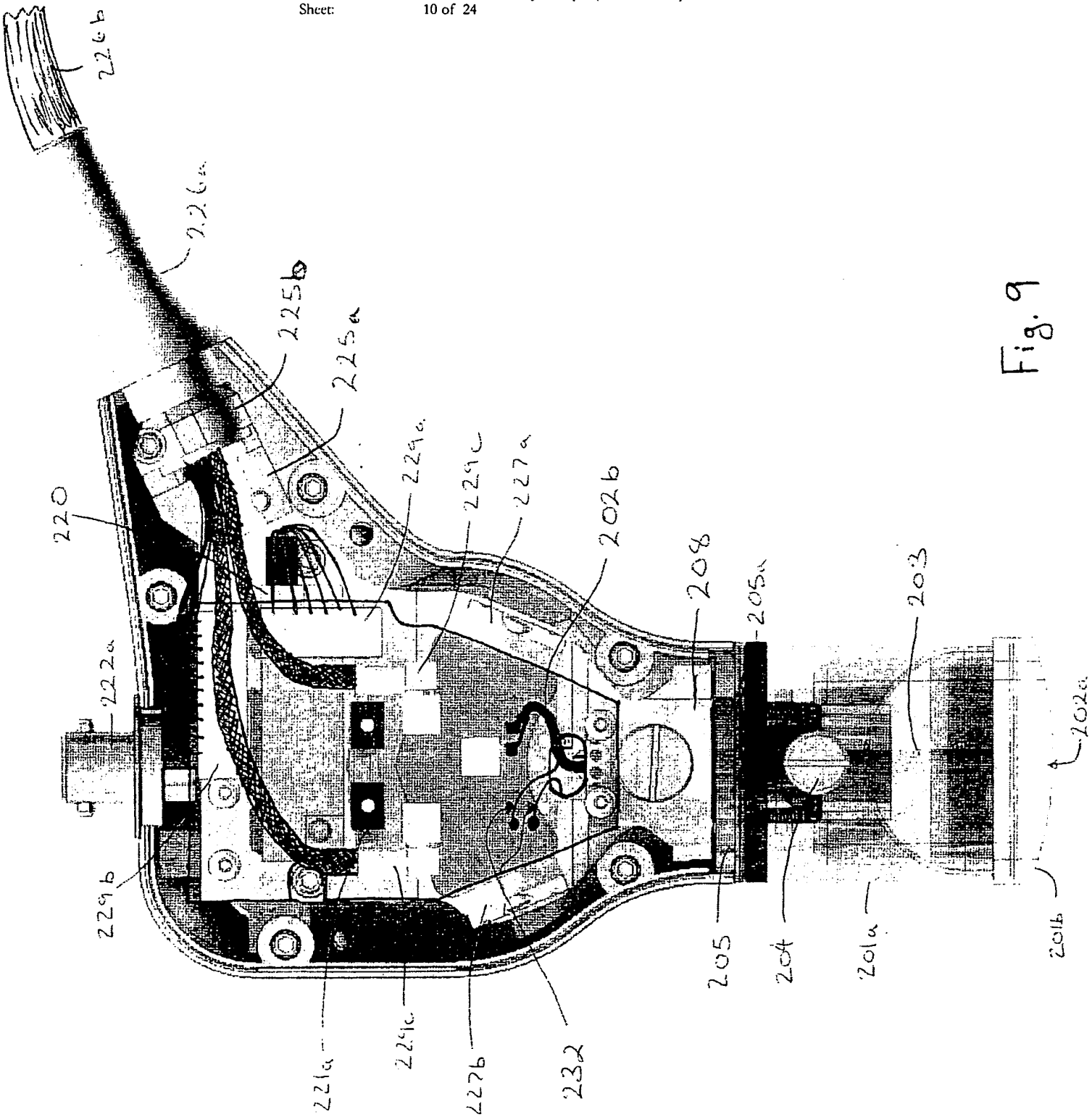
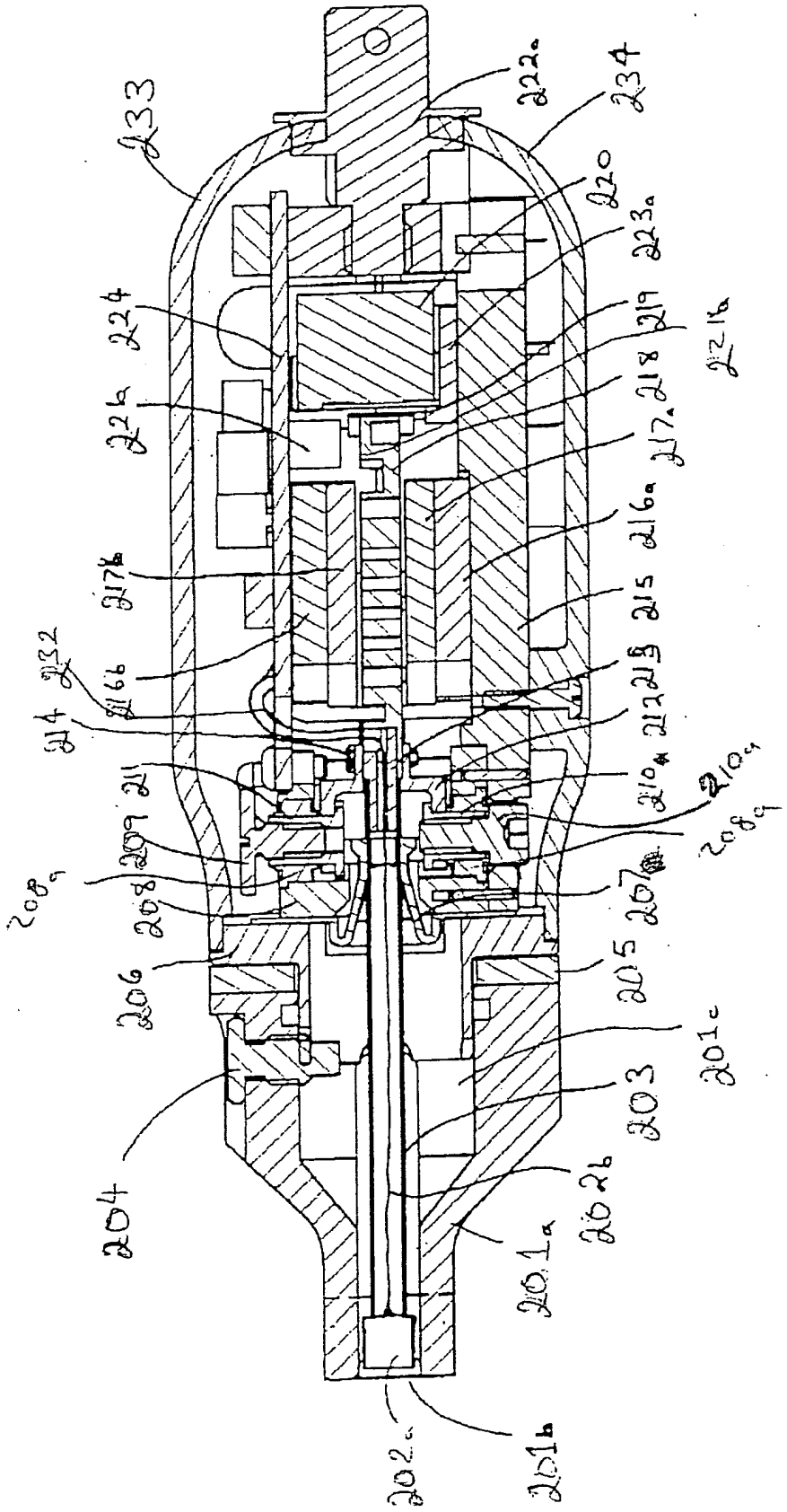

226b
226a
225b
225a
229a
229c
227a
202b
204
205a
203
220
222a
229b
221a
229c
227b
232
205
204
201a
201b
202a

Fig. 9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217b
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216b
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210a
210c
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208c
208a
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207
206
205
201c
203
204
202b
201a
202a
201b

Fig. 10

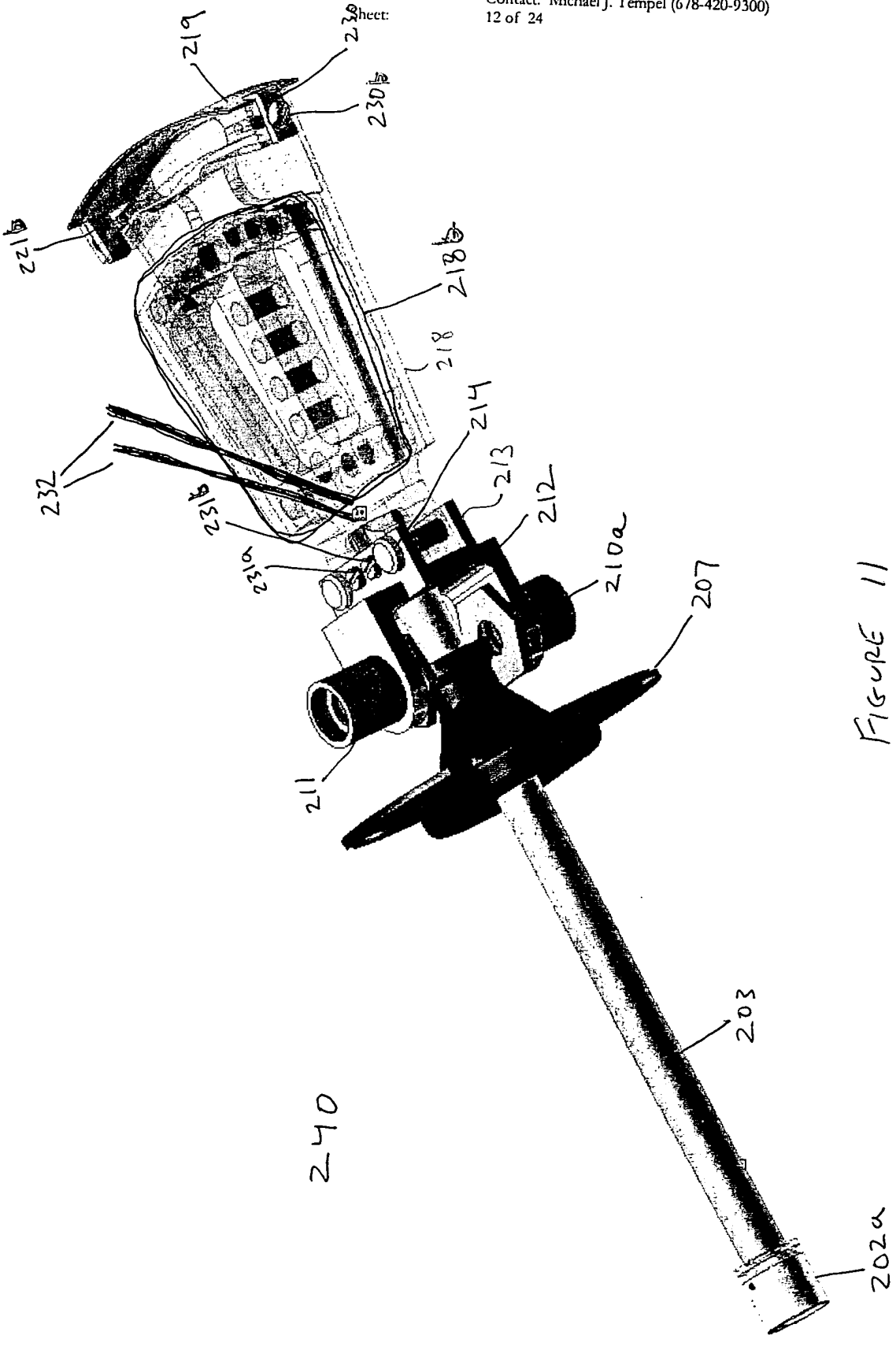

219
230a
230b
221b
218b
218
214
213
212
232
231a
231b
210a
207
211
240
203
202a

FIGURE 11

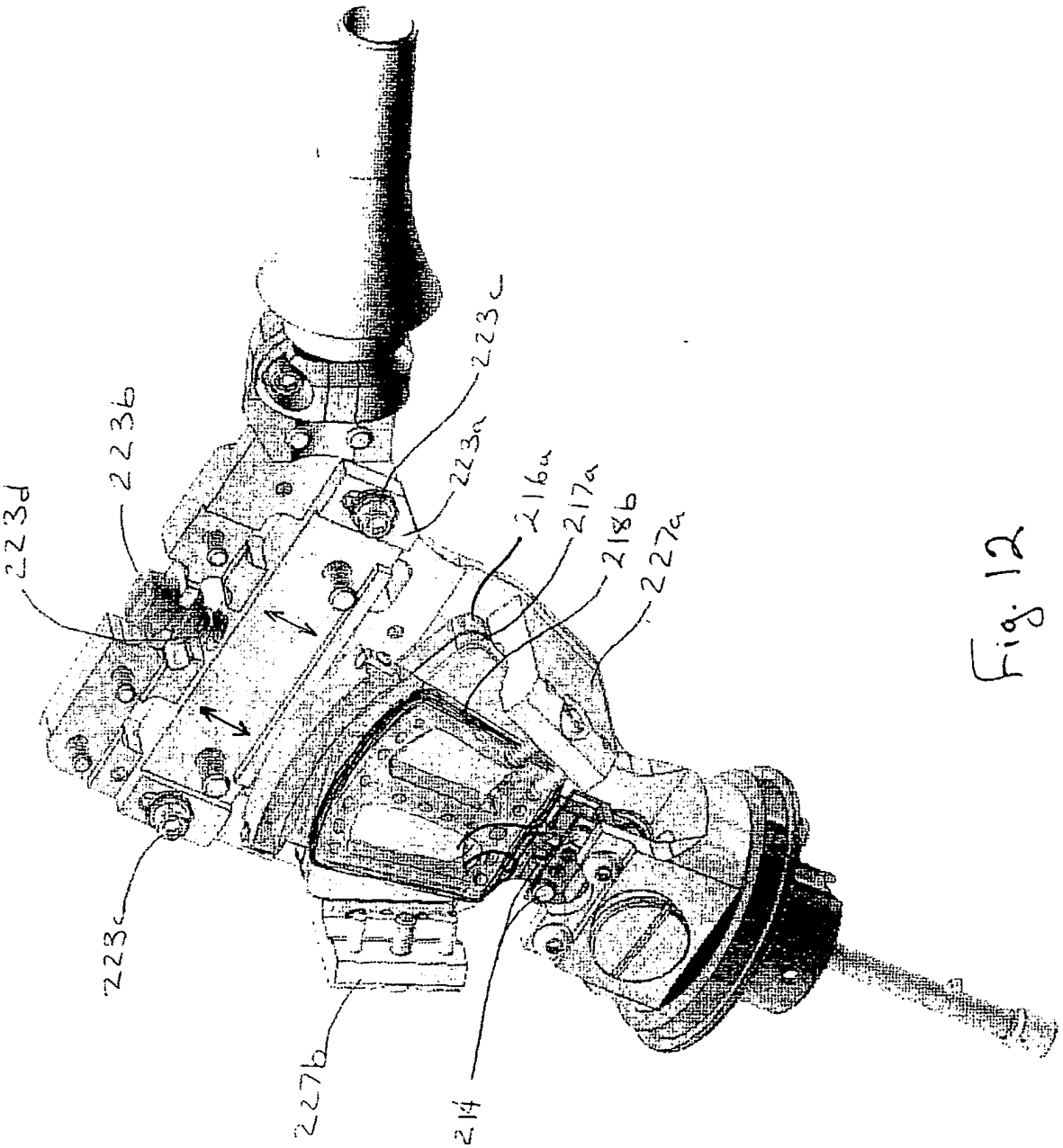


Fig. 12

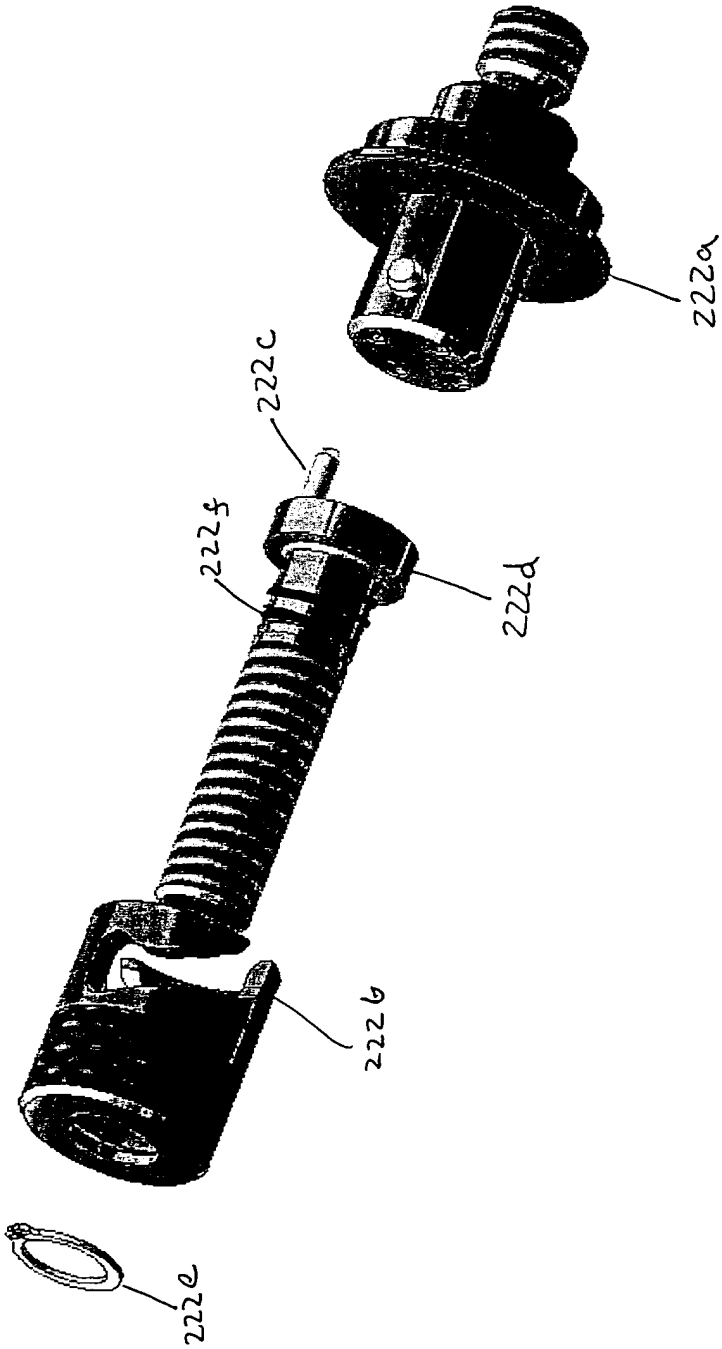


Figure 13

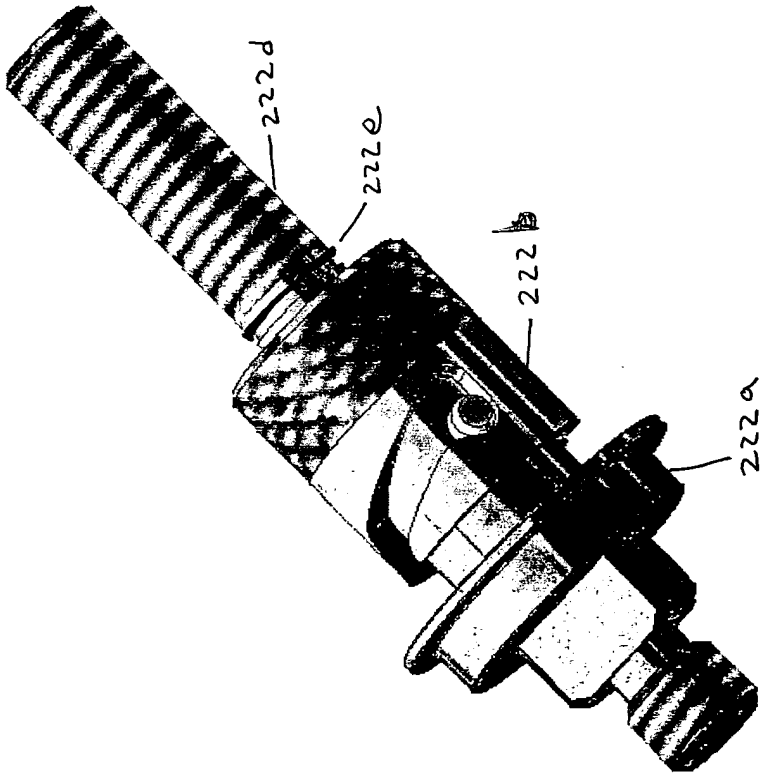


FIGURE 14

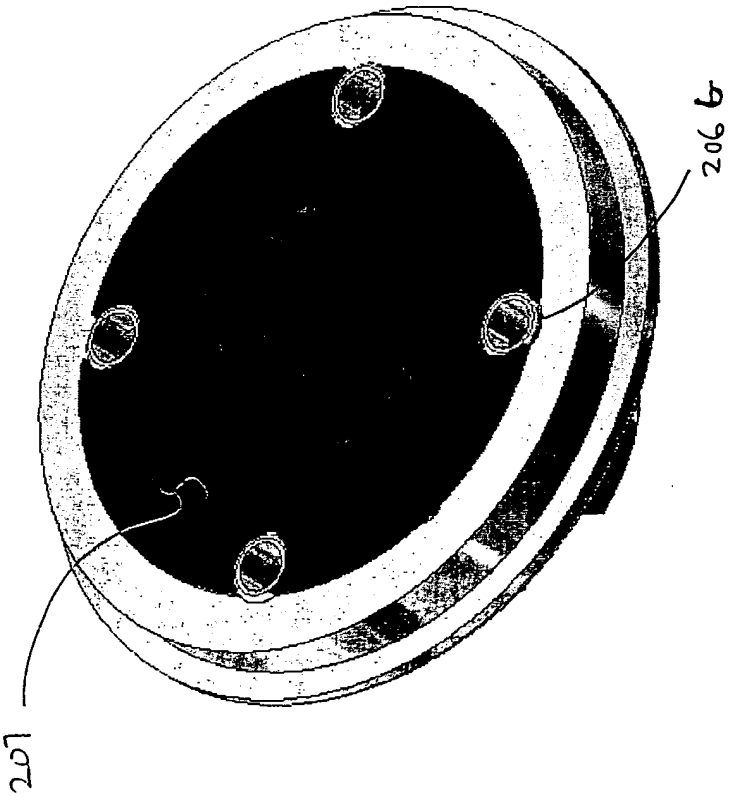


FIGURE 15

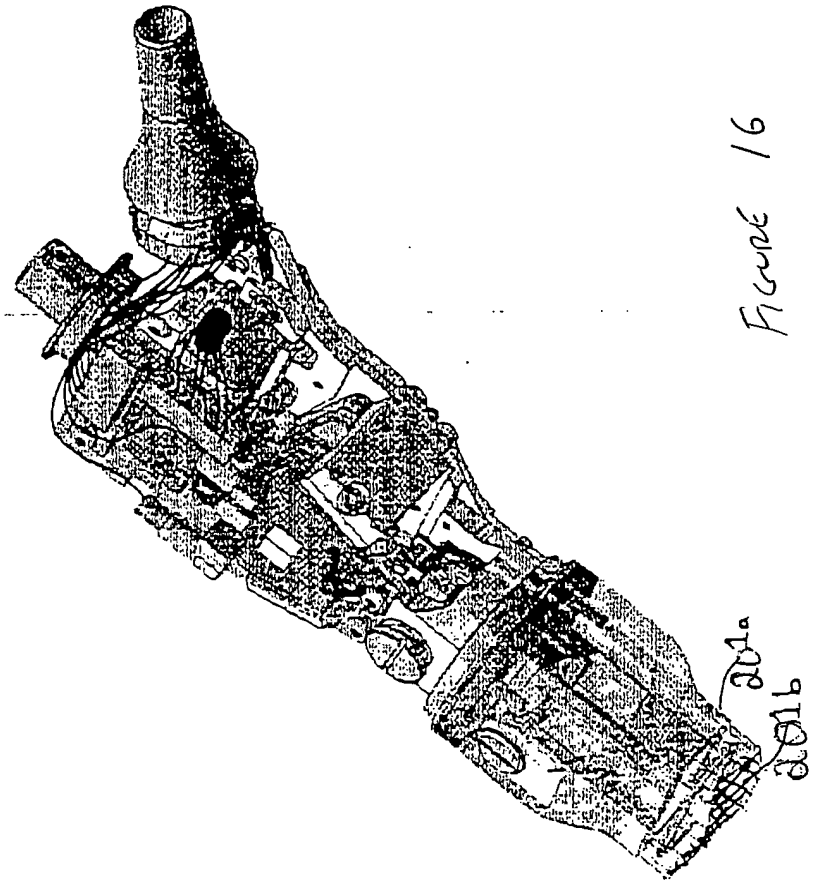


Figure 16

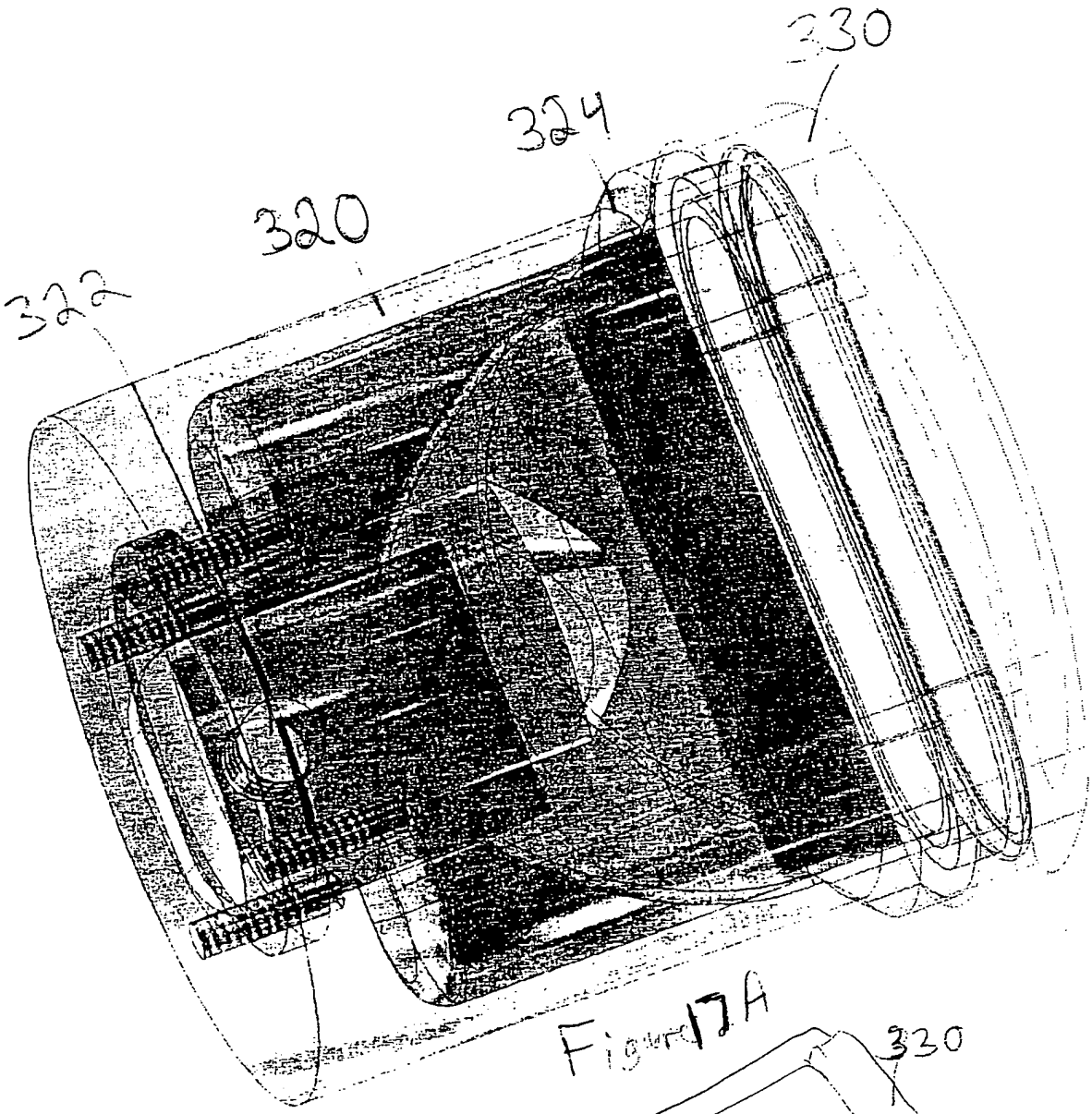


Figure 17A

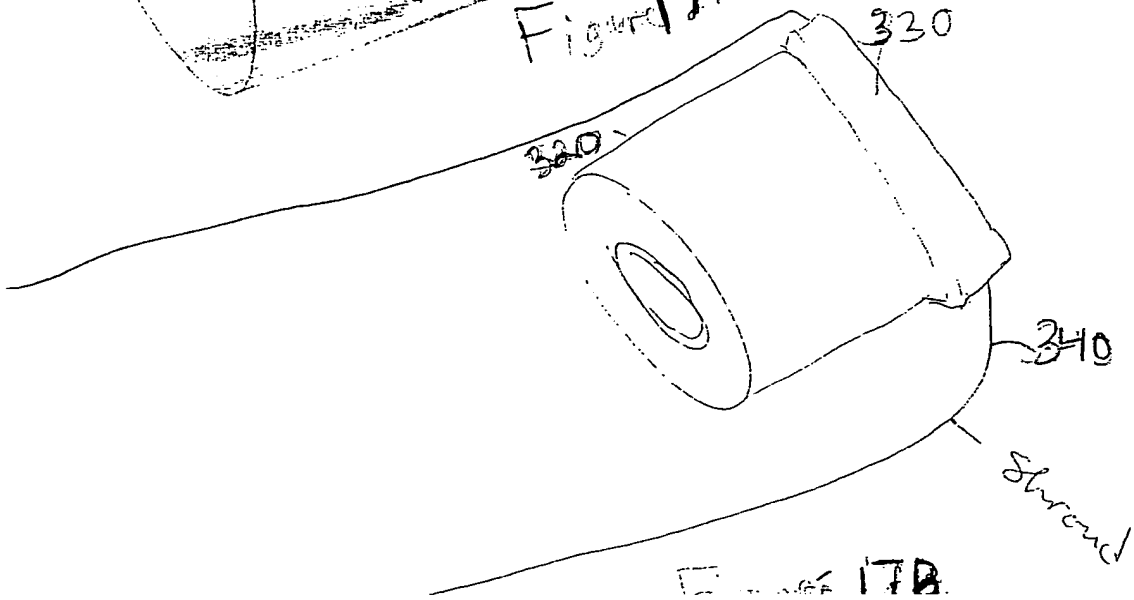
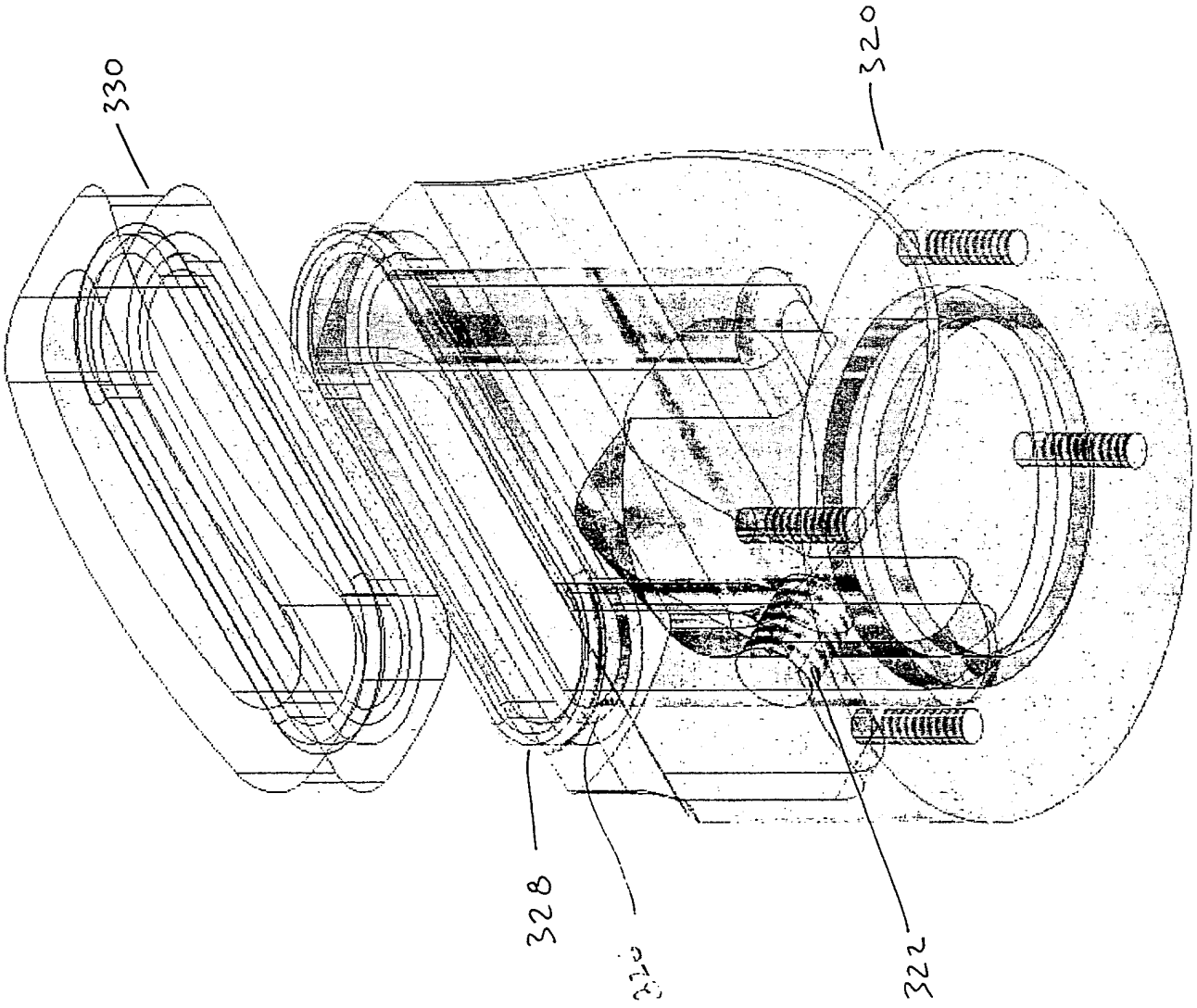


Figure 17B

FIGURE 18



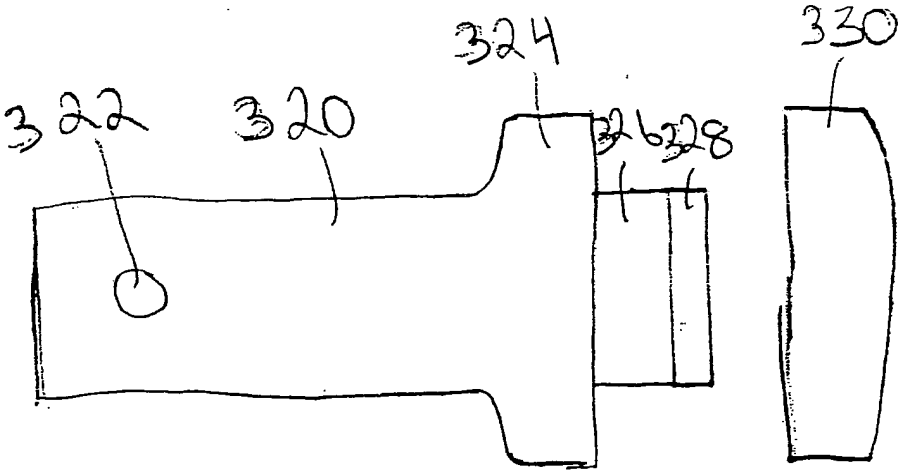


Figure 19A

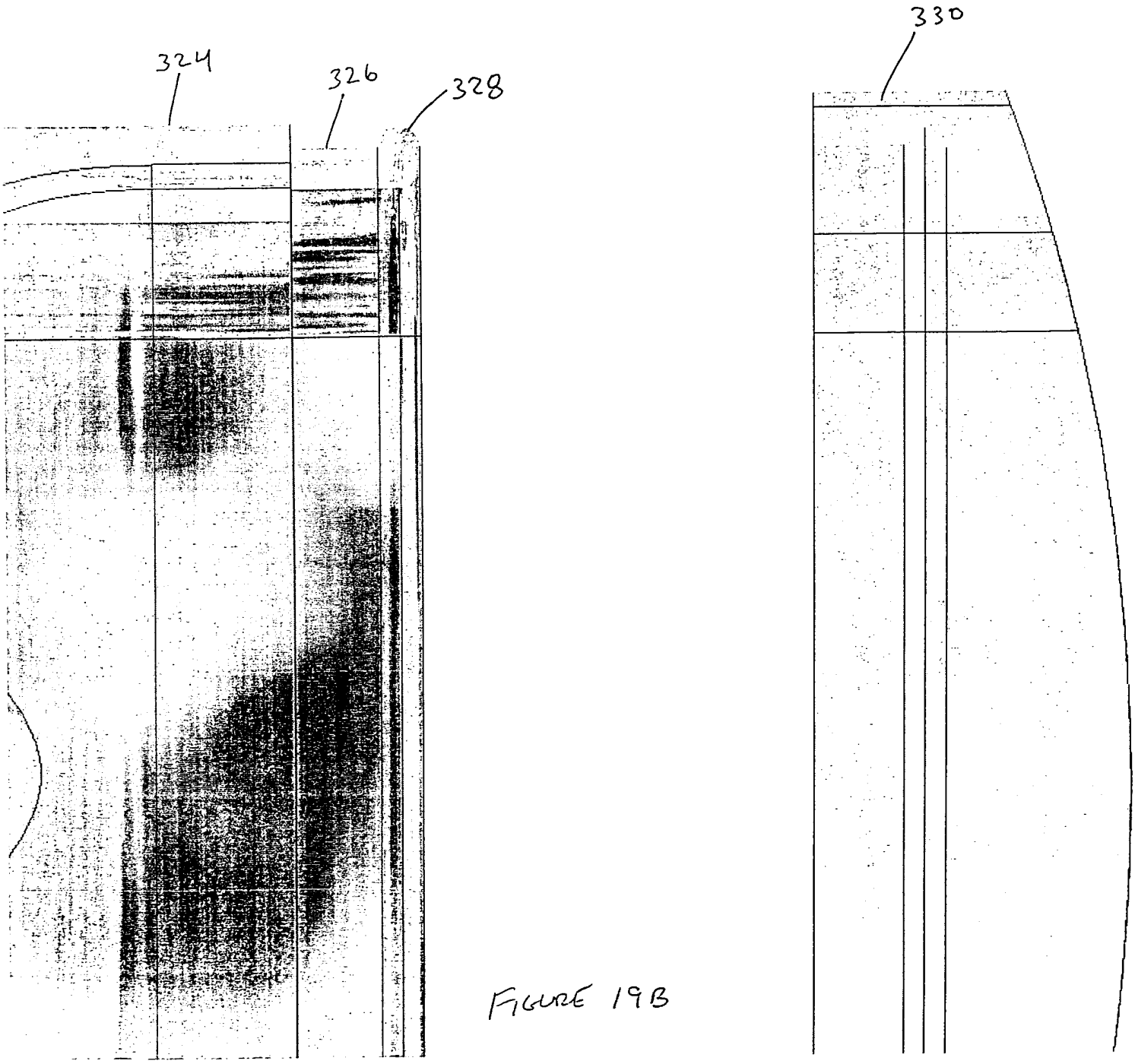


FIGURE 19B

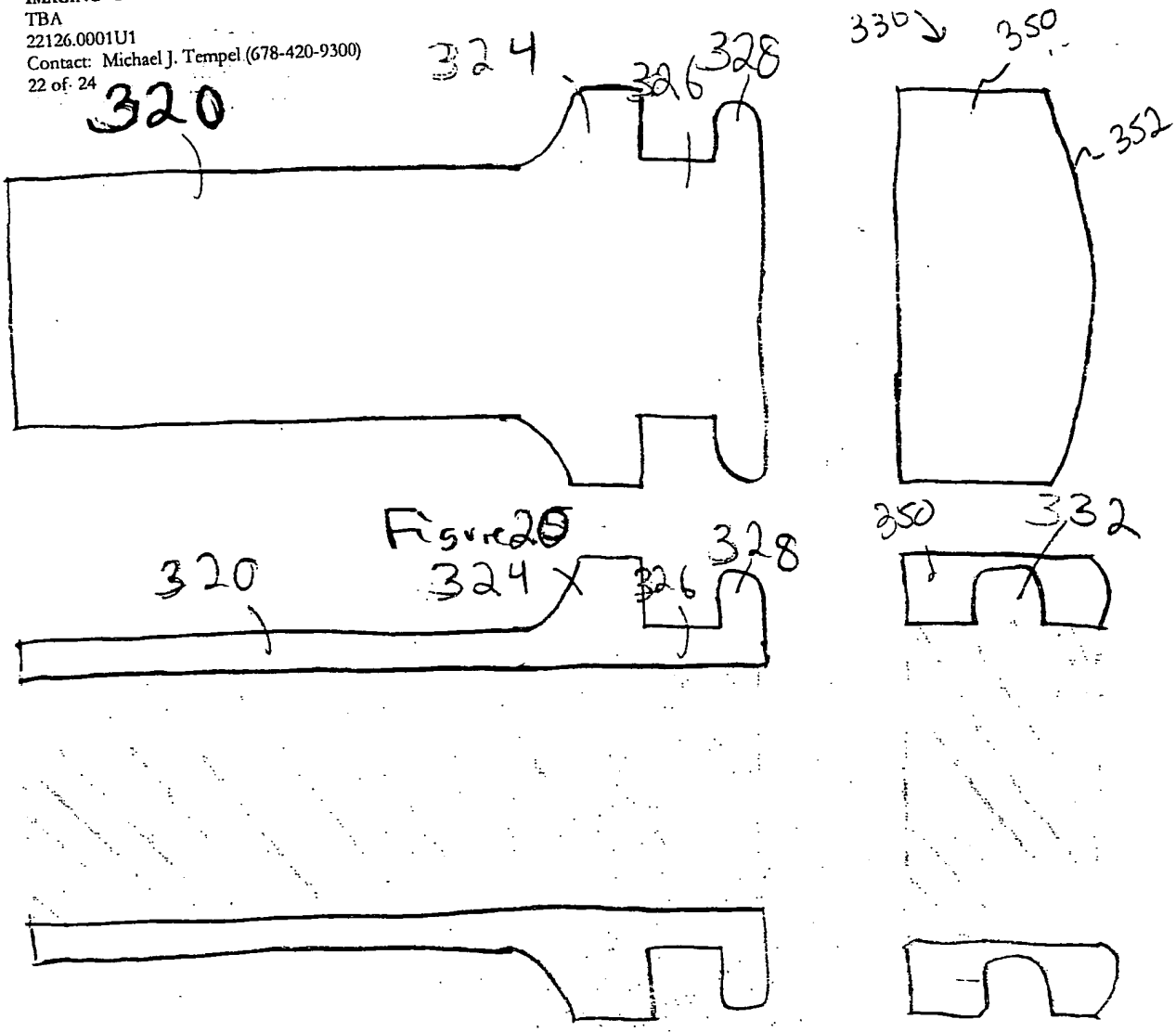


Figure 20

Figure 21

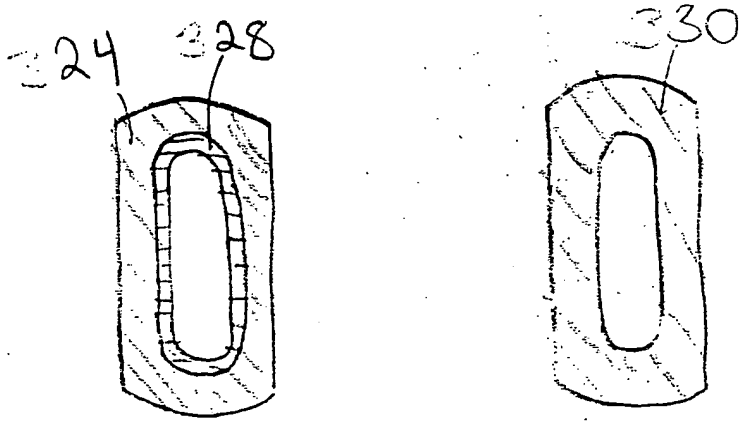


Figure 22

Figure 23

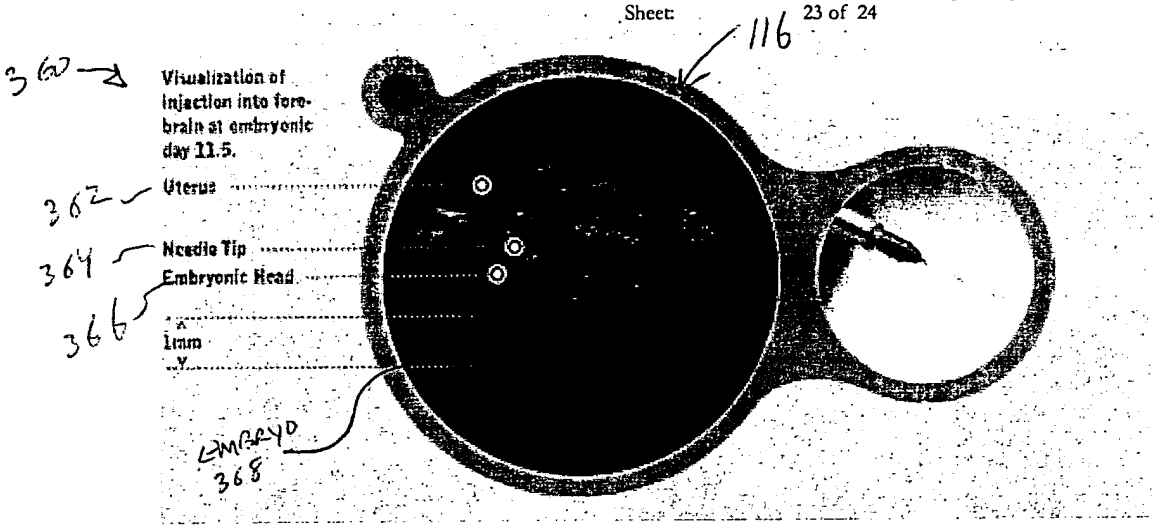

360
Visualization of injection into fore-brain at embryonic day 11.5.
362
Uterus
364
Needle Tip
Embryonic Head
366
1mm
116
EMBRYO
368

FIGURE 24

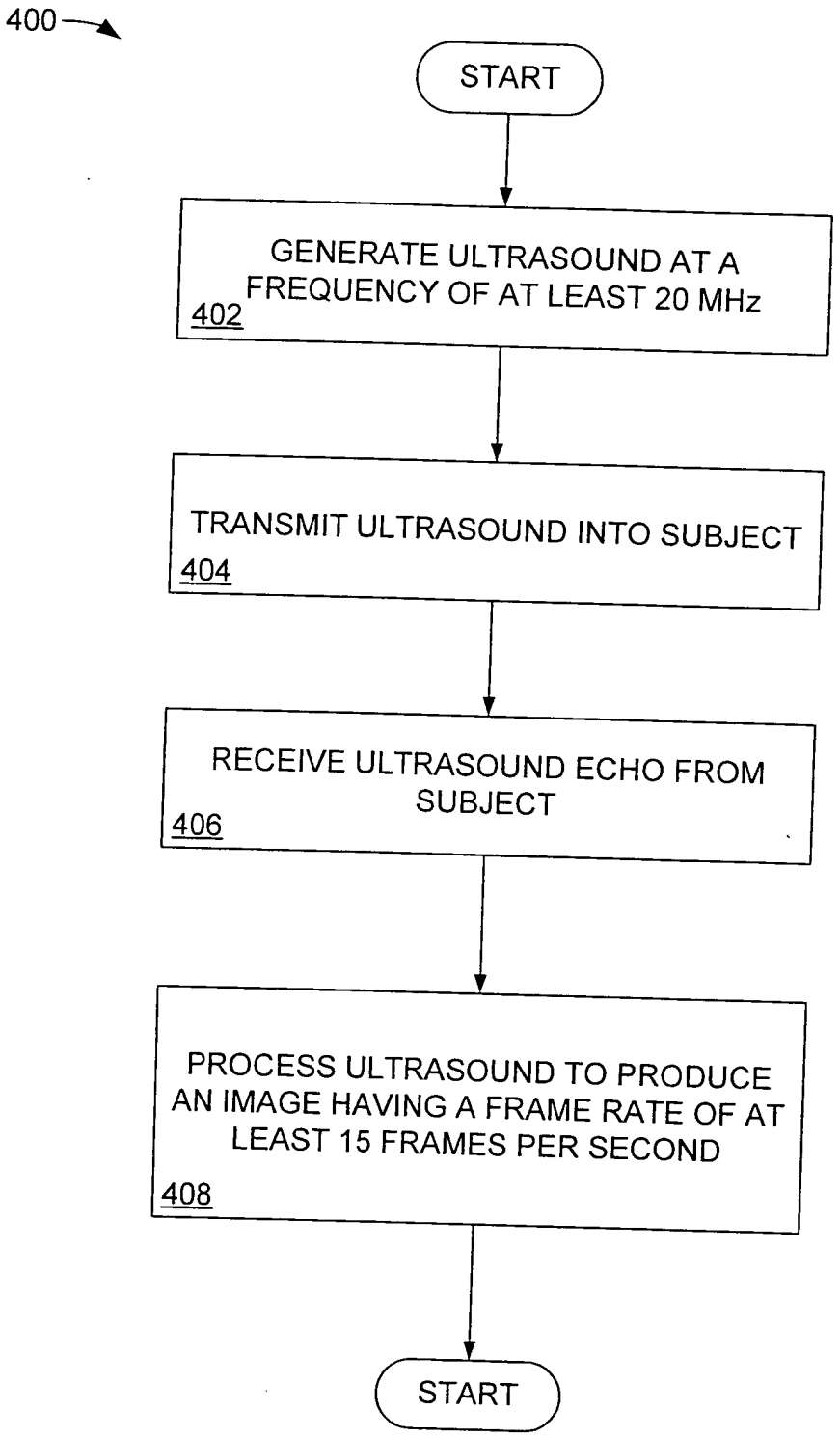

400
START
GENERATE ULTRASOUND AT A FREQUENCY OF AT LEAST 20 MHz
402
TRANSMIT ULTRASOUND INTO SUBJECT
404
RECEIVE ULTRASOUND ECHO FROM SUBJECT
406
PROCESS ULTRASOUND TO PRODUCE AN IMAGE HAVING A FRAME RATE OF AT LEAST 15 FRAMES PER SECOND
408
START

FIG. 25